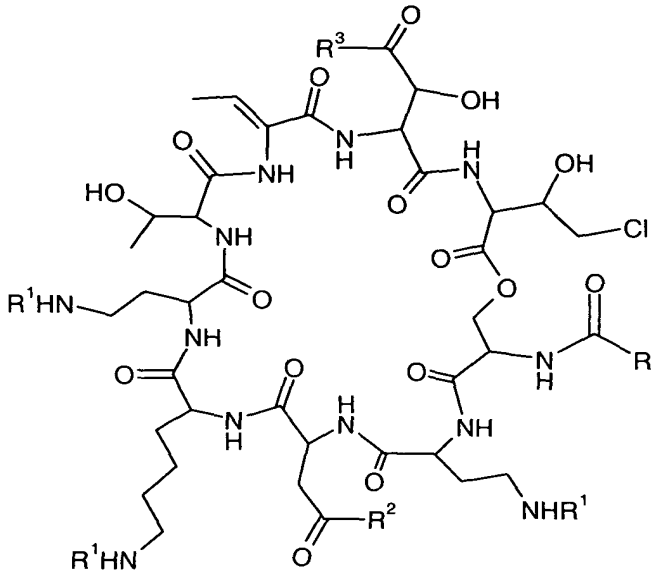
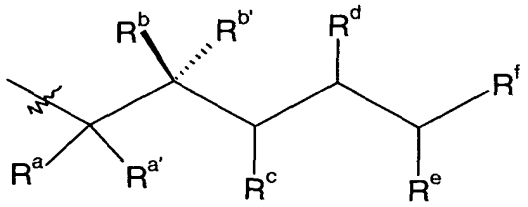
CLEAN CLAIM SET

1. A pseudomycin prodrug having the following structure:



wherein

R is



where

R^a and $R^{a'}$ are independently hydrogen or methyl, or either R^a or $R^{a'}$ is alkyl amino, taken together with R^b or $R^{b'}$ forms a six-membered cycloalkyl ring, a six-membered aromatic ring or a double bond, or taken together with R^c forms a six-membered aromatic ring;

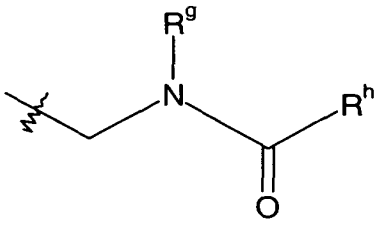
R^b and $R^{b'}$ are independently hydrogen, halogen, or methyl, or either R^b or $R^{b'}$ is amino, alkylamino, α-acetoacetate, methoxy, or hydroxy;

R^c is hydrogen, hydroxy, C_1-C_4 alkoxy, hydroxyalkoxy, or taken together with R^e forms a 6-membered aromatic ring or C_5-C_6 cycloalkyl ring;

R^e is hydrogen, or taken together with R^f is a six-membered aromatic ring, C_5-C_{14} alkoxy substituted six-membered aromatic ring, or C_5-C_{14} alkyl substituted six-membered aromatic ring, and

R^f is C_8-C_{18} alkyl, C_5-C_{11} alkoxy or biphenyl;

R is



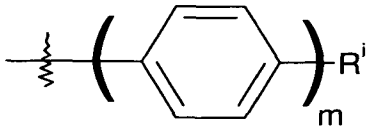
,

where

R^g is hydrogen, or C_1-C_{13} alkyl, and

R^h is C_1-C_{15} alkyl, C_4-C_{15} alkoxy, (C_1-C_{10} alkyl)phenyl, -$(CH_2)_n$-aryl, or -$(CH_2)_n$-(C_5-C_6 cycloalkyl), where n = 1 or 2; or

R is

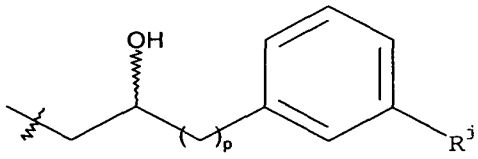


,

where

R^i is a hydrogen, halogen, or C_5-C_8 alkoxy, and m is 1, 2 or 3;

R is

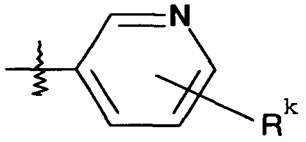


where

R^j is C_5-C_{14} alkoxy or C_5-C_{14} alkyl, and

p = 0, 1 or 2;

R is



where

R^k is C_5-C_{14} alkoxy; or

R is -(CH_2)-NR^m-(C_{13}-C_{18} alkyl), where R^m is H, -CH_3 or

–C(O)CH_3;

R^1 is independently hydrogen, an acyloxymethylene-1,3-dioxolen-2-one, or an acyloxymethylenecarboxylate, provided that at least one R^1 is an acyloxymethylene-1,3-dioxolen-2-one or an acyloxymethylenecarboxylate;

R^2 and R^3 are independently -OR^{2a} or -$N(R^{2b})(R^{2c})$,

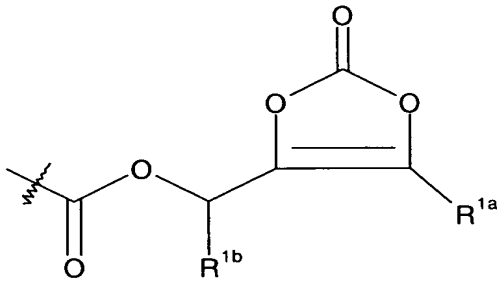
where

R^{2a} and R^{2b} are independently hydrogen, C_1-C_{10} alkyl, C_3-C_6 cycloalkyl, hydroxy(C_1-C_{10})alkyl, alkoxy(C_1-C_{10})alkyl, C_2-C_{10} alkenyl, amino(C_1-C_{10})alkyl, mono- or di-alkylamino(C_1-C_{10})alkyl, aryl(C_1-C_{10})alkyl, heteroaryl(C_1-C_{10})alkyl, cycloheteroalkyl(C_1-C_{10})alkyl, or

R^{2b} is an alkyl carboxylate residue of an aminoacid alkyl ester and R^{2c} is hydrogen or C_1-C_6 alkyl; and

pharmaceutically acceptable salts and solvates thereof.

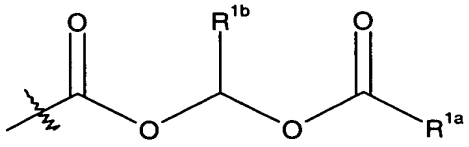
2. The prodrug of Claim 1 wherein said acyloxymethylene-1,3-dioxolen-2-one is represented by structure 1(a):



1(a)

where R^{1a} is C_1-C_{10} alkyl, C_1-C_{10} alkenyl, benzyl, or aryl and R^{1b} is hydrogen or methyl.

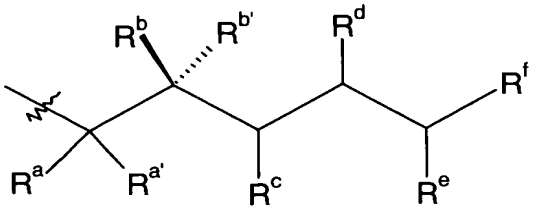
3. The prodrug of Claim 1 wherein said acyloxymethylenecarboxylate is represented by structure 1(b):



1(b)

where R^{1a} is C_1-C_{10} alkyl, C_1-C_{10} alkenyl, benzyl, or aryl and R^{1b} is hydrogen or methyl.

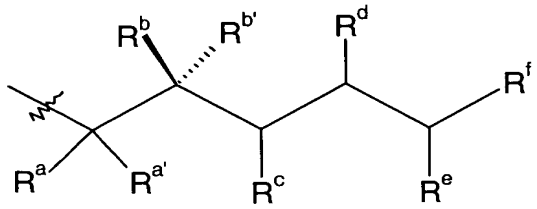
4. The prodrug of Claim 2 wherein R is represented by the structure



,

where $R^{b'}$ is hydroxy, R^a, $R^{a'}$, R^b, R^c, R^d, and R^e are all hydrogen, and R^f is n-octyl.

5. The prodrug of Claim 3 wherein R is represented by the structure

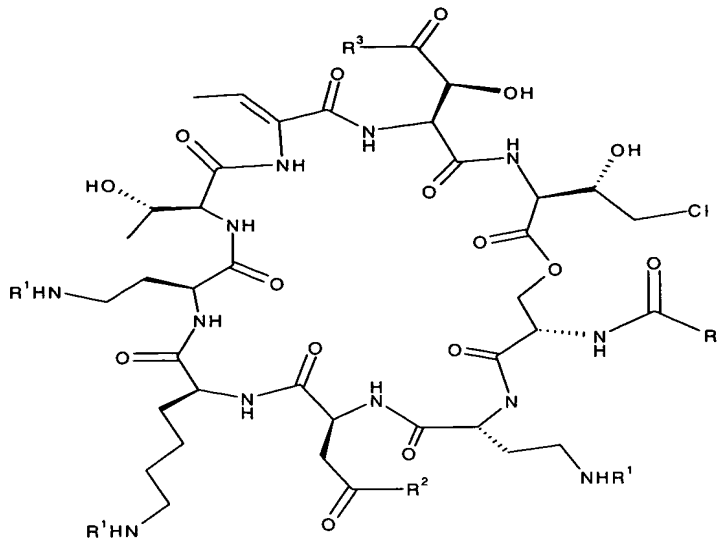


,

where $R^{b'}$ is hydroxy, R^a, $R^{a'}$, R^b, R^c, R^d, and R^e are all hydrogen, and R^f is n-octyl.

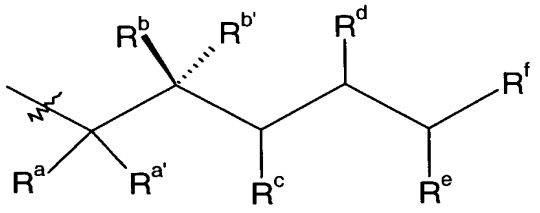
6. The prodrug of Claim 1 wherein said alkyl carboxylate residue of an aminoacid alkyl ester is represented by $-CH_2CO_2CH_3$, $-CH(CO_2CH_3)CH(CH_3)_2$, $-CH(CO_2CH_3)CH(phenyl)$, $-CH(CO_2CH_3)CH_2OH$, $-CH(CO_2CH_3)CH_2(p\text{-hydroxyphenyl})$, $-CH(CO_2CH_3)CH_2SH$, $-CH(CO_2CH_3)CH_2(CH_2)_3NH_2$, $-CH(CO_2CH_3)CH_2(4\text{-imidazole})$, $-CH(CO_2CH_3)CH_2(5\text{-imidazole})$, $-CH(CO_2CH_3)CH_2CO_2CH_3$, or $-CH(CO_2CH_3)CH_2CO_2NH_2$.

7. A pseudomycin prodrug having the following structure:



wherein

R is



where

R^a and $R^{a'}$ are independently hydrogen or methyl, or either R^a or $R^{a'}$ is alkyl amino, taken together with R^b or $R^{b'}$ forms a six-membered cycloalkyl ring, a six-membered aromatic ring or a double bond, or taken together with R^c forms a six-membered aromatic ring;

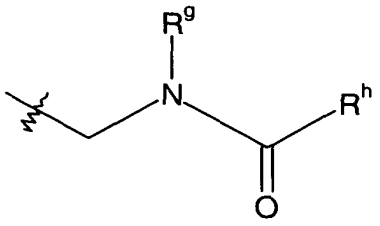
R^b and $R^{b'}$ are independently hydrogen, halogen, or methyl, or either R^b or $R^{b'}$ is amino, alkylamino, α-acetoacetate, methoxy, or hydroxy;

R^c is hydrogen, hydroxy, C_1-C_4 alkoxy, hydroxyalkoxy, or taken together with R^e forms a 6-membered aromatic ring or C_5-C_6 cycloalkyl ring;

R^e is hydrogen, or taken together with R^f is a six-membered aromatic ring, C_5-C_{14} alkoxy substituted six-membered aromatic ring, or C_5-C_{14} alkyl substituted six-membered aromatic ring, and

R^f is C_8-C_{18} alkyl, C_5-C_{11} alkoxy or biphenyl;

R is

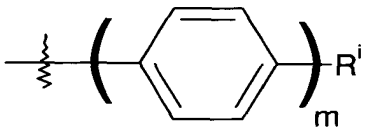


where

R^g is hydrogen, or C_1-C_{13} alkyl, and

R^h is C_1-C_{15} alkyl, C_4-C_{15} alkoxy, (C_1-C_{10} alkyl)phenyl, -$(CH_2)_n$-aryl, or -$(CH_2)_n$-(C_5-C_6 cycloalkyl), where n = 1 or 2; or

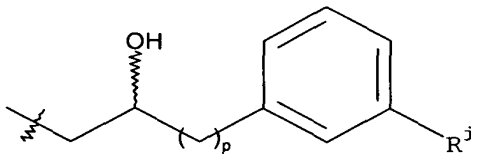
R is



where

R^i is a hydrogen, halogen, or C_5-C_8 alkoxy, and m is 1, 2 or 3;

R is

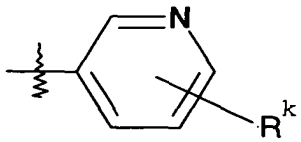


where

R^j is C_5-C_{14} alkoxy or C_5-C_{14} alkyl, and

p = 0, 1 or 2;

R is



where

R^k is C_5-C_{14} alkoxy; or

R is -(CH_2)-NR^m-(C_{13}-C_{18} alkyl), where R^m is H, -CH_3 or –$C(O)CH_3$;

R^1 is independently hydrogen, an acyloxymethylene-1,3-dioxolen-2-one, or an acyloxymethylenecarboxylate, provided that at least one R^1 is an acyloxymethylene-1,3-dioxolen-2-one or an acyloxymethylenecarboxylate;

R^2 and R^3 are independently $-OR^{2a}$ or $-N(R^{2b})(R^{2c})$,

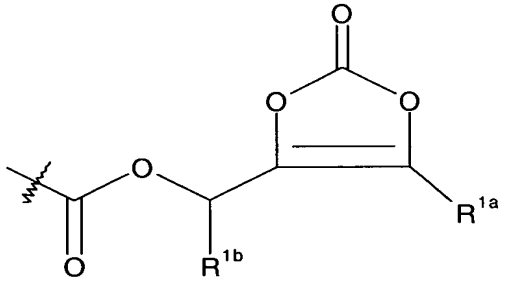
where

R^{2a} and R^{2b} are independently hydrogen, C_1-C_{10} alkyl, C_3-C_6 cycloalkyl, hydroxy(C_1-C_{10})alkyl, alkoxy(C_1-C_{10})alkyl, C_2-C_{10} alkenyl, amino(C_1-C_{10})alkyl, mono- or di-alkylamino(C_1-C_{10})alkyl, aryl(C_1-C_{10})alkyl, heteroaryl(C_1-C_{10})alkyl, cycloheteroalkyl(C_1-C_{10})alkyl, or

R^{2b} is an alkyl carboxylate residue of an aminoacid alkyl ester and R^{2c} is hydrogen or C_1-C_6 alkyl; and

pharmaceutically acceptable salts and solvates thereof.

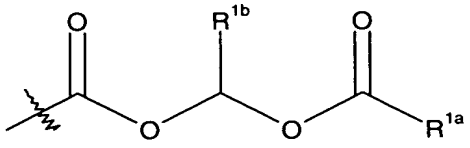
8. The prodrug of Claim 7 wherein said acyloxymethylene-1,3-dioxolen-2-one is represented by structure 1(a):



1(a)

where R^{1a} is C_1-C_{10} alkyl, C_1-C_{10} alkenyl, benzyl, or aryl and R^{1b} is hydrogen or methyl.

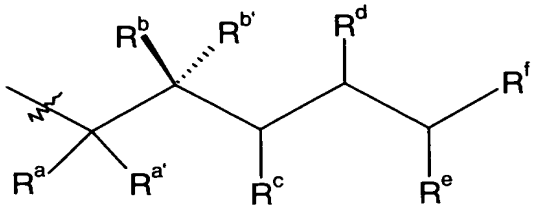
9. The prodrug of Claim 7 wherein said acyloxymethylenecarboxylate is represented by structure 1(b):



1(b)

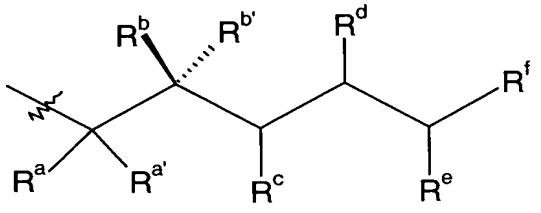
where R^{1a} is C_1-C_{10} alkyl, C_1-C_{10} alkenyl, benzyl, or aryl and R^{1b} is hydrogen or methyl.

10. The prodrug of Claim 8 wherein R is represented by the structure



where $R^{b'}$ is hydroxy, R^a, $R^{a'}$, R^b, R^c, R^d, and R^e are all hydrogen, and R^f is n-octyl.

11. The prodrug of Claim 9 wherein R is represented by the structure



where $R^{b'}$ is hydroxy, R^a, $R^{a'}$, R^b, R^c, R^d, and R^e are all hydrogen, and R^f is n-octyl.

12. The prodrug of Claim 7 wherein said alkyl carboxylate residue of an aminoacid alkyl ester is represented by $-CH_2CO_2CH_3$, $-CH(CO_2CH_3)CH(CH_3)_2$, $-CH(CO_2CH_3)CH(phenyl)$, $-CH(CO_2CH_3)CH_2OH$, $-CH(CO_2CH_3)CH_2(p\text{-hydroxyphenyl})$, $-CH(CO_2CH_3)CH_2SH$, $-CH(CO_2CH_3)CH_2(CH_2)_3NH_2$, $-CH(CO_2CH_3)CH_2(4\text{-imidazole})$, $-CH(CO_2CH_3)CH_2(5\text{-imidazole})$, $-CH(CO_2CH_3)CH_2CO_2CH_3$, or $-CH(CO_2CH_3)CH_2CO_2NH_2$.

14. A pharmaceutical formulation comprising said pseudomycin prodrug or said pharmaceutically acceptable salt or solvate thereof as in Claim 1 and a pharmaceutically acceptable carrier, buffer, diluent, or excipient.

15. A medicament for treating a fungal infection in an animal wherein said medicament comprises said pseudomycin prodrug or said pharmaceutically acceptable salt or solvate thereof of Claim 1.

16. A method for treating a fungal infection in an animal in need thereof, comprising administering to said animal said pseudomycin prodrug or said pharmaceutically acceptable salt or solvate thereof of Claim 7.